

weak) acid, is capable of driving it from its combinations. Granite, a silicate, composed of quartz, feld-spar and mica, contains both modifications of silica, as constituent parts of its composition. Its uncombined silica, (quartz,) is insoluble. Its combined silica in the feld-spar and mica, is soluble. The feld-spar may be considered, properly, a double silicate, composed of silicate of alumina, and silicate of potash. The same is true of mica, or isinglass, a mineral similar in composition to the feld-spar. We thus can explain the rationale of the decomposition of granite, if exposed to the influence of water and the atmosphere. The silicate of potash is decomposed by the carbonic acid of the air, and carbonate of potash and an acid silicate of potash formed, both being soluble in water. If these substances are washed out, quartz, pure sand, (the uncombined silicate,) and a white mass of kaolin, silicate of alumina, (clay,) in a pulverulent condition, remains.

The action of atmospheric oxygen manifests itself in another way in the decomposition of the silicates, many among which as hyperate, syenite, basalt, and others, contain in chemical combination the protoxide of iron, which very greedily attracts oxygen from the air, in order to procure for itself a higher degree of oxydation, as pure iron does when exposed to air and moisture. The immediate consequence of this change, is the formation of new combinations, which produce an alteration in the position of the atoms, the smallest parts of the minerals, so that their original solidity is diminished, and a continued crumbling into small pieces and in the course of time, complete disunion takes place. If the silicates contain, as is frequently the case, combinations of metals with sulphur, (sulphurets,) as iron pyrites, copper pyrites, &c., diffused in the finest particles through this mass, their decomposition much more readily takes place, inasmuch as these components have their ingredients transformed by the absorption of oxygen into their corresponding salts; iron pyrites becomes sulphate of iron, copper pyrites sulphate of copper, &c. The salts are very soluble in water, and will be gradually washed out by its influence.

The capacity, then, of the silicates for decomposition, depends on the quantity of the silicate of potash, and of such other substances as absorb oxygen, and have in this way a change of their chemical composition. We always find that the larger the quantity of these substances, the more quickly and thoroughly is the exposed rock decomposed.

The origin of the Neptunic rocks, already has shown us the influence which water and air have over their ingredients. They are all soluble, to a greater or less degree, either in pure water, or in water impregnated with carbonic acid.

The property inherent in water, to occupy a larger space when